ABSTRACT

Methods and apparatuses for providing cryptographic assurance based on ranges as to whether a particular data item is on a list. According to one computer-implemented method, the items on the list are sorted and ranges are derived from adjacent pairs of data items on the list. Next, cryptographically manipulated data is generated from the plurality of ranges. At least parts of the cryptographically manipulated data is transmitted onto a network for use in cryptographically demonstrating whether any given data item is on the list. According to another computer-implemented method, a request message is received requesting whether a given data item is on a list of data items. In response, a range is selected that is derived from the pair of data items on the list that define the smallest range that includes the given data item. A response message is transmitted that cryptographically demonstrates whether the first data item is on the list using cryptographically manipulated data derived from the range. According to another computer-implemented method, a request message requesting an indication as to whether a first data item is on a list of data items is transmitted. In response, a message is received that cryptographically demonstrates whether the first data item is on the list, where the response message identifies a range that is derived from the pair of data items on the list that defines the smallest range that includes the first data item.